

REMARKS

Claims 1-20 are pending in the application. Claims 7, 11, 12 and 20 have been amended.

Claim Objections

Claims 7, 11 and 12 have been amended as suggested by the Examiner to overcome the stated objections.

Claim Rejections – 35 U.S.C. §102(b)

The Examiner rejected claims 1-6, 11, 12 and 16-20 under 35 USC 102(b) as being anticipated by Maenaka (U.S. Patent No. 5,552,827). Applicant respectfully disagrees with the Examiner's rejection. In particular, Maenaka fails to teach or suggest "comparing relative changes in a particular color pixel signal level for two mutually orthogonal directions," as claimed or similarly claimed in independent claims 1, 13, 16, 19 and the claims that depend therefrom.

As noted in the specification on page 6, first paragraph to page 8:

"As illustrated in Fig. 1, the immediately adjacent pixel locations in the horizontal and vertical directions comprise green pixel signal values. Therefore, these shall be employed to estimate the green pixel signal value for this particular pixel location. First, *the relative change in the green pixel signal values for the horizontal direction and the vertical direction across this particular pixel location is computed and compared.* This is accomplished using the following equations.

$$\begin{aligned}\text{Chor} &= G_{m,n+1} - G_{m,n-1}; \\ \text{Cver} &= G_{m+1,n} - G_{m-1,n};\end{aligned}$$

If the relative change in the vertical direction is greater than the relative change in the horizontal direction, the relative change being relative to the magnitude of the values computed above, then the values in the horizontal direction, that is, in this embodiment, the green pixel signal values that are the immediately adjacent pixel signal values in the horizontal direction, are weighed more heavily. In this embodiment, the weight assigned to horizontal green pixel values have been chosen, based on experimentation, as 0.5, although the invention is not limited in scope in this respect. It is noted that other weights may be employed and provide satisfactory results. At the same time the weights assigned to vertical neighboring green pixel signal values have been chosen as 0.1, although the invention is not limited in scope in this respect. On the basis of

the above discussion the missing green pixel signal values in this particular pixel location is estimated as

$$G_{m,n} = [0.5 * (G_{m,n-1} + G_{m,n+1}) + 0.1 * (G_{m-1,n} + G_{m+1,n})] / (0.5 + 0.5 + 0.1 + 0.1); \text{ or}$$

$$G_{m,n} = 0.41667 * (G_{m,n-1} + G_{m,n+1}) + 0.08333 * (G_{m-1,n} + G_{m+1,n});$$

However, if the relative change in the horizontal direction is greater than the relative change in the vertical direction, in terms of pixel signal level for the green pixel signal values, then a reverse approach is employed. More particularly, the vertical green pixel signal values that are immediately adjacent to the red pixel signal value, in this particular embodiment, are weighed more heavily. In particular, the green pixel signal value in this particular pixel signal location is estimated as follows.

$$G_{m,n} = 0.08333 * (G_{m,n-1} + G_{m,n+1}) + 0.41667 * (G_{m-1,n} + G_{m+1,n});$$

It is noted that the form of this equation is similar to the form above, except that the vertical and horizontal pixel signal values that are immediately adjacent to the red pixel signal value have been interchanged. Finally, if the two relative changes are equal, or substantially equal, then a simple average of the four green pixel signal values that are immediately adjacent to the red pixel signal value are averaged, for this embodiment, in accordance with the following equation.

$$G_{m,n} = 0.25 * (G_{m,n-1} + G_{m,n+1} + G_{m-1,n} + G_{m+1,n});$$

Therefore, in order to compute the signal value for the green color plane, where the particular pixel location has a pixel signal value in the red color plane, the pixel signal values immediately adjacent to that pixel location in the green color plane are compared. As shall be described in more detail below, it is not always the case that the color plane being computed corresponds to the particular color of the pixel signal values that are compared, although it is true in this embodiment for the situation just described." (Emphasis added.)

Maenaka fails to teach or suggest comparing "relative changes" in a particular color pixel signal level for two mutually orthogonal directions. Maenaka, in the passages cited by the Examiner, refers to "correlation" values but no where is there disclosed comparing "relative changes" in a particular color pixel signal level.

The Examiner also rejected claims 1, 13, 16 and 19 under 35 U.S.C. 102(b) as being anticipated by Hamilton (U.S. Pat. No. 5,629,734). Applicant respectfully disagrees with the Examiner's rejection. In particular, Hamilton fails to teach or suggest "comparing relative changes in a particular color pixel signal level for two mutually orthogonal directions," as

claimed or similarly claimed in independent claims 1, 13, 16, 19 and the claims that depend therefrom.

In particular, Hamilton fails to teach or suggest comparing "relative changes" in a particular color pixel signal level for two mutually orthogonal directions. Hamilton, in the passages cited by the Examiner, refers to the "absolute value of the LaPlacian of the green plane" but nowhere is there disclosed comparing "relative changes" in a particular color pixel signal level.

It is therefore respectfully requested that the Examiner withdraw his rejection of the pending claims.

Claim Rejections – 35 U.S.C. §103

Claims 7-10 are patentable over Maenaka in view of Hamilton for the same reasons noted above.

CONCLUSION

In view of the foregoing, it is respectfully asserted that all of the claims pending in this patent application are in condition for allowance.

The required fee for a two month extension of time is enclosed. Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #02-2666.



If the Examiner has any questions, she is invited to contact the undersigned at (310) 252-7605. Reconsideration of this patent application and early allowance of all the claims is respectfully requested.

Respectfully submitted,

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Sharon Wong
Senior Patent Attorney
Intel Corporation
Reg. No. 37,760

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025
(310) 207-3800

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